

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										



General Certificate of Secondary Education  
June 2011

# Design and Technology: Product Design

**45551**

**Unit 1 Written Paper**

**Monday 6 June 2011 9.00 am to 11.00 am**

**For this paper you must have:**

- a pen, a pencil, a ruler, an eraser, a pencil sharpener and coloured pencils.

**Time allowed**

- 2 hours

**Instructions**

- Use black ink or black ball-point pen. Use pencil and coloured pencils only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

**Information**

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 120.
- The question in Section A relates to the context referred to in the preliminary material that was previously issued.
- You are reminded of the need for good English and clear presentation in your answers. Quality of Written Communication will be assessed in Question 1 (d).

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	



J U N 1 1 4 5 5 5 1 0 1

## Section A

Answer **all** questions in the spaces provided.

Question 1 is about designing.

You are advised to spend about 30 minutes on this question.

**1** The products shown below all belong to the Memphis design movement.



**1 (a) (i)** Describe **two** features of the Memphis style.

Feature 1 .....

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Feature 2 .....

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(4 marks)

**1 (a) (ii)** Give the name of **one** designer in this design movement.

.....

(1 mark)



- 1 (b)** You are going to create a design for a product for a child in the **under-seven age range**. This product must be based on the Memphis style.

Name the product you are going to design.

.....

In the table below give **three different** design criteria which will make your product suitable for the user.

Give **one** reason for each design criteria.

An example is given for you.

Example Design Criteria	Reason
<i>Should be hard wearing.</i>	<i>So that it stands up to everyday use and does not break easily.</i>

Your Design Criteria	Reason
1 .....	.....
.....	.....
.....	.....
.....	.....
2 .....	.....
.....	.....
.....	.....
.....	.....
3 .....	.....
.....	.....
.....	.....
.....	.....

(6 marks)

Question 1 continues on the next page

Turn over ►



The products shown below all belong to the Memphis design movement.



- 1 (c) In the space below and opposite, develop a design for the product you named in part (b). You should show enough detail for somebody else to be able to make it.

There are marks for:

- how well your design links to the Memphis style
- originality of ideas
- materials and construction techniques
- how well you communicate your design.



*(15 marks)*

**Turn over ►**



0 5

- 1 (d)** Using your design criteria you gave in part (b), evaluate how your design is suitable for a **child under seven**.

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(6 marks)

32
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**Section B**

Answer **all** questions in the spaces provided.

Question 2 is about materials.

You are advised to spend about 15 minutes on this question.

**2 (a)** Complete the table below.

You should:

- identify a specific material which comes from each of the sources
- tick whether the material is renewable or non-renewable
- name a product made from the material.

An example is given for you.

Source	Specific material	Renewable	Non-renewable	Product
<i>The Earth and rocks</i>	<i>Aluminium</i>		✓	<i>Ladder</i>
Oil				
Plants and trees				
Animals				

(9 marks)

**Question 2 continues on the next page**

**Turn over ►**



**2 (b) (i)** Name **either** a new **or** a smart material.

.....  
(1 mark)

**2 (b) (ii)** Describe the properties of the new or smart material you have named in part (i).  
Explain how it could be used in a product.

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(3 marks)





Question 3 is about product marketing.

You are advised to spend about 10 minutes on this question.

**3 (a)** Using examples, explain what is meant by *brand identity*.

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(4 marks)

**Question 3 continues on the next page**

**Turn over ►**



**3 (b) (i)** Manufacturers market their products through advertising.

Name **three** different methods of advertising.

1 .....

2 .....

3 .....

(3 marks)

**3 (b) (ii)** Choose **one** of the methods you have named in part (i).

Explain how this method of advertising persuades consumers to buy the product.  
Use examples of products in your answer.

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(4 marks)



Question 4 is about manufacturing products.

You are advised to spend about 25 minutes on this question.

**4** A secondary school plans to run open days for year 6 pupils from local primary schools.

The Design and Technology department want to make a simple product in a production line with groups of year 6 pupils.

**4 (a)** You have been asked to design the product that the pupils will make.  
You will be asked to describe how the pupils will manufacture the product later in the question.

Your product should:

- be suitable to be made in a batch of 20 in a production line
- include a decorative feature.

Use notes and/or sketches to show your product in the box below.

(4 marks)

**4 (b) (i)** Name a suitable main material for your product.

.....

(1 mark)

**Turn over ►**



- 4 (b) (ii)** Explain why the material you have chosen in part (i) is suitable for this scale of production.

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(2 marks)

- 4 (c)** In the box below use notes and/or diagrams to show how to make your product.  
You should show quality control checks at each stage.

(8 marks)



**4 (d)** Year 6 pupils will work together in a production line to make 20 identical products.

In the space below, draw a layout to show how you would organise the production of your product.

There are marks for:

- layout and order of processes
- identification of tools and equipment
- how you organise the year 6 pupils
- how you make sure each product is made to a high quality.



(10 marks)

25
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Turn over ►






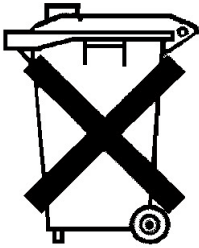
Question 5 is about environmental issues.

You are advised to spend about 20 minutes on this question.

**5** It is important to consider sustainability when designing products.

**5 (a)** Explain the meaning of each of the symbols shown below.

Give an example of a product which would have the symbol on it.

Symbol	Meaning	Product
		
		
		
		

(8 marks)



- 5 (b)** Describe **two** ways in which supermarkets are encouraging us to stop wasting materials.

1 .....

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2 .....

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(4 marks)

- 5 (c)** Portable music players have changed over time.



- 5 (c) (i)** CD players were very popular in the 1990s.

Explain why CD players might be considered to be bad for the environment.

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(3 marks)

Turn over ►



**5 (c) (ii)** MP3 players are very popular today.

Explain why MP3 players might be considered to be environmentally friendly in comparison with CD players.

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(3 marks)

18





Question 6 is about quality.

You are advised to spend about 10 minutes on this question.

**6 (a)** Explain the following terms.

**6 (a) (i)** Quality Assurance

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.....

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(2 marks)

**6 (a) (ii)** Tolerance

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(2 marks)

**6 (b)** Explain the difference between the meaning of the British Standards Institute Kite Mark and the meaning of the Conformité European symbol.

**British Standards Institute Kite Mark**



**Conformité European symbol**



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(3 marks)

**Turn over ►**



**6 (c)** Select **one** of the products below.

Explain how the manufacturer would ensure it consistently meets quality standards.

## Chair



## Shirt



## Apple pie



## Tea cup and saucer



## Greetings cards



## Scientific calculator

[illegible]

(4 marks)



Question 7 is about modelling and prototyping.

You are advised to spend about 10 minutes on this question.

**7 (a)** Explain the value of modelling and prototyping in the development of a new product.

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(4 marks)

**Question 7 continues on the next page**

**Turn over ►**



[illegible]

10

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